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Summary

Proposed amendments to the independent claims listed below were discussed. The Examiner recommended replacing "encoding, in said memory, .." in line 8 of the proposed Claim 51 to "encoding, in said computer, ..". The proposed claims listed below in general will overcome the "tie-to a particular machine" issue related to the 101 rejections set forth in the prior office action in light of Bilski.

The Examiner reminded Mr. Fagan to make sure the proposed amendments would not create "new matter" and other potential issues. For example, the proposed Claim 160 specifies a computer program product comprises hardware components such as filter and analyzers. Also, the proposed Claim 270 specifies a computer program product comprises a hardware component of display.

Mr. Fagan indicated that he would propose to the Applicant to cancel all the "data structure" claims.

Mr. Fagan and Examiner Chen have reached some agreements as indicated above. However, allowability of all of the proposed claims has not been reached because they are still under amendment process and need further review and consideration by Examiner Chen upon receiving the final official amendments.

Proposed amended claims under discussion

51. (Currently Amended) A method for recognizing a pattern in information comprising data, the method comprising:

producing data representative of one or more physical characteristics or one or more representations of physical characteristics within a physical context of an item of interest with a transducer;

inputting said data into ~~a computer comprising a memory and a display device;~~

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~~encoding, in said memory,~~ said data as parameters of a plurality of Fourier components in Fourier space;

adding at least two of said Fourier components together to form at least one Fourier series in Fourier space;

sampling at least one of said Fourier series in Fourier space with a filter to form a sampled Fourier series;

modulating said sampled Fourier series in Fourier space with said filter to form a modulated Fourier series;

determining a spectral similarity between said modulated Fourier series and another Fourier series;

determining a probability expectation value based on said spectral similarity;

generating a probability operand based on said probability expectation value;

selecting a desired value for said probability operand, wherein recognition of a pattern in said information is obtained when said probability operand has said desired value; and

~~outputting, using said display device,~~ said recognized pattern.

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127. (Currently Amended) A method for recognizing a pattern in information and establishing an order formatted pattern in information with respect to standard ordered information, the method comprising:

a.) obtaining a string comprising a sum of Fourier series from a memory of a computer, said string representing information representative of one or more physical

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characteristics or one or more representations of physical characteristics within a physical context of an item of interest;

- b.) selecting, using the computer, at least two filters from a selected set of filters;
- c.) sampling, using the computer, the string with the filters such that each of the filters produces a sampled Fourier series, each Fourier series comprising a subset of the string;
- d.) modulating, using the computer each of the sampled Fourier series in Fourier space with the corresponding selected filter such that each filter produces an order formatted Fourier series;
- e.) adding, using the computer the order formatted Fourier series produced by each filter to form a summed Fourier series in Fourier space;
- f.) obtaining an ordered Fourier series from the memory;
- g.) determining, using the computer a spectral similarity between the summed Fourier series and the ordered Fourier series;
- h.) determining, using the computer, a probability expectation value based on the spectral similarity;
- i.) generating, using the computer, a probability operand based on the probability expectation value;
- j.) repeating steps b-i until the probability operand has a desired value, when the probability operand has a desired value a pattern in information has been recognized and an order formatted pattern in the information has been established;
- k.) storing the summed Fourier series to an intermediate memory;
- l.) removing the selected filters from the selected set of filters to form an updated set of filters;
- m.) removing the subsets from the string to obtain an updated string;
- n.) selecting an updated filter from the updated set of filters;
- o.) sampling the updated string with the updated filter to form a sampled Fourier series comprising a subset of the string;
- p.) modulating the sampled Fourier series in Fourier space with the corresponding selected updated filter to form an updated order formatted Fourier series;
- q.) recalling the summed Fourier series from the intermediate memory;

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r.) adding the updated order formatted Fourier series to the summed Fourier series from the intermediate memory to form an updated summed Fourier series in Fourier space;

s.) obtaining an updated ordered Fourier series from the high level memory;

t.) determining a spectral similarity between the updated summed Fourier series and the updated ordered Fourier series;

u.) determining a probability expectation value based on the spectral similarity;

v.) generating a probability operand based on the probability expectation value;

w.) repeating steps n-v until the probability operand has a desired value or all of the updated filters have been selected from the updated set of filters, when the probability operand has a desired value a pattern in information has been recognized an order formatted pattern in the information has been established;

x.) if all of the updated filters have been selected before the probability operand has a desired value, then clearing the intermediate memory and returning to step b;

y.) if the probability operand has a desired value, then storing the updated summed Fourier series to the intermediate memory;

z.) repeating steps l-y until one of the following set of conditions is satisfied: the updated set of filters is empty, or the remaining subsets of the string of step m.) is nil; and

aa.) storing the Fourier series in the intermediate memory in the high level memory of said computer.

156. (Currently Amended) A computer comprising a processor for recognizing a pattern in information comprising data and establishing an order formatted pattern in information, the computer comprising:

a computer memory comprising a set of initial ordered Fourier series;
 software loaded into the memory of the computer that, when executed by the processor, causes the computer to generate:

an input layer that receives data representative of physical characteristics or representations of physical characteristics within an input context of the physical characteristics and transforms the data into a Fourier series in Fourier

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space wherein the input context is encoded in time as delays corresponding to modulation of the Fourier series at corresponding frequencies;

an association layer that receives a plurality of the Fourier series in Fourier space from the memory, recognizes a pattern in information represented by the Fourier series, forms a string comprising a sum of Fourier series, and stores the string in memory;

a string ordering layer that receives the string and at least one ordered Fourier series from the memory, orders the Fourier series contained in the string by establishing an order formatted pattern in information to form an ordered string, and stores the ordered string in memory; and

a predominant configuration layer that receives multiple ordered strings from the memory, forms complex ordered strings from the ordered strings, stores the complex ordered strings to the memory, and activates the components of any of the layers of the system to recognize a pattern in information and establish an order formatted pattern in information; and
a display device for displaying the recognized pattern.

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160. (Currently Amended) A computer program product, comprising a computer-readable medium having a computer readable program code embodied therein, said computer readable program code adapted to be executed by a computer to implement a method for recognizing a pattern in information comprising data, the method comprising:

encoding data as parameters of a plurality of Fourier components in Fourier space using said computer;

adding at least two of said Fourier components together to form at least one Fourier series in Fourier space using said computer;

providing a system using said computer, wherein the system comprises distinct software components, and wherein the distinct software components comprise:

a filter for sampling at least one of said Fourier series in Fourier space to form a sampled Fourier series, wherein the sampled Fourier series in Fourier space is modulated with said filter to form a modulated Fourier series;

a spectral similarity analyzer for determining a spectral similarity between said modulated Fourier series and another Fourier series;

a probability expectation analyzer for determining a probability expectation value based on said spectral similarity; and

a probability operand generator for generating a probability operand based on said probability expectation value,

wherein the system selects a desired value for said probability operand, wherein recognition of a pattern in said information is obtained when said probability operand has said desired value.

228. (Currently Amended) A computer-readable medium on which is stored a computer program for providing a method for recognizing a pattern in information, the computer program comprising instructions which, when executed by a computer comprising a processor, cause the processor to:

represent the information as a plurality of Fourier series in Fourier space, wherein the information is representative of one or more physical characteristics or one or more representations of physical characteristics within a physical context of an item of interest;

form associations, using the computer, between at least two of the Fourier series by modulating and sampling the Fourier series with filters and by coupling the filtered Fourier series based on a probability distribution, wherein when at least two of the Fourier series have been associated recognition of a pattern in the information is achieved; and

store the at least two of the Fourier series that have been associated in a memory.

237. (Currently Amended) A computer-readable medium on which is stored a computer program for providing a method for recognizing a pattern in information and establishing an order formatted pattern in information with respect to standard ordered information, the computer program comprising instructions which, when executed by a computer, perform the steps of:

a.) obtaining, using the computer, a string comprising a sum of Fourier series from a memory, said string representing information, said information representative of one or more

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physical characteristics or one or more representations of physical characteristics within a physical context of an item of interest;

- b.) selecting, using the computer, at least two filters from a selected set of filters;
- c.) sampling, using the computer, the string with the filters such that each of the filters produces a sampled Fourier series, each Fourier series comprising a subset of the string;
- d.) modulating, using the computer, each of the sampled Fourier series in Fourier space with the corresponding selected filter such that each filter produces an order formatted Fourier series;
- e.) adding, using the computer, the order formatted Fourier series produced by each filter to form a summed Fourier series in Fourier space;
- f.) obtaining, using the computer, an ordered Fourier series from the memory;
- g.) determining, using the computer, a spectral similarity between the summed Fourier series and the ordered Fourier series;
- h.) determining, using the computer, a probability expectation value based on the spectral similarity;
- i.) generating, using the computer, a probability operand based on the probability expectation value;
- j.) repeating steps b-i until the probability operand has a desired value, when the probability operand has a desired value a pattern in information has been recognized and an order formatted pattern in the information has been established;
- k.) storing the summed Fourier series to an intermediate memory;
- l.) removing the selected filters from the selected set of filters to form an updated set of filters;
- m.) removing the subsets from the string to obtain an updated string;
- n.) selecting an updated filter from the updated set of filters;
- o.) sampling the updated string with the updated filter to form a sampled Fourier series comprising a subset of the string;
- p.) modulating the sampled Fourier series in Fourier space with the corresponding selected updated filter to form an updated order formatted Fourier series;
- q.) recalling the summed Fourier series from the intermediate memory;

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- r.) adding the updated order formatted Fourier series to the summed Fourier series from the intermediate memory to form an updated summed Fourier series in Fourier space;
- s.) obtaining an updated ordered Fourier series from the high level memory;
- t.) determining a spectral similarity between the updated summed Fourier series and the updated ordered Fourier series;
- u.) determining a probability expectation value based on the spectral similarity;
- v.) generating a probability operand based on the probability expectation value;
- w.) repeating steps n-v until the probability operand has a desired value or all of the updated filters have been selected from the updated set of filters, when the probability operand has a desired value a pattern in information has been recognized and an order formatted pattern in the information has been established;
- x.) if all of the updated filters have been selected before the probability operand has a desired value, then clearing the intermediate memory and returning to step b;
- y.) if the probability operand has a desired value, then storing the updated summed Fourier series to the intermediate memory;
- z.) repeating steps l-y until one of the following set of conditions is satisfied: the updated set of filters is empty, or the remaining subsets of the string of step m.) is nil; and
- aa.) storing the Fourier series in the intermediate memory in the high level memory.

267. (Currently Amended) A computer-readable medium on which is stored a computer program for providing a method for recognizing a pattern in information comprising data and forming a predominant configuration, the computer program comprising instructions which, when executed by a computer, perform the steps of:

- a.) accepting an input at the computer from one or more components representative of the current activation rates of the one or more components and one or more prior activation probability parameters;
- b.) generating an activation probability parameter using the computer based on a prior activation probability parameter and a weighting based on an activation rate of the corresponding component;
- c.) storing the activation probability parameter in memory;

d.) generating a probability operand based on the activation probability parameter using the computer;

e.) if said probability operand is a desired value, activating using the computer, any component of one or more of the group consisting of an input layer, an association layer, a string ordering layer, and a predominant configuration layer, the activation being based on the activation probability parameter, wherein recognition of a pattern in information is achieved when said probability operand is said desired value, and

f.) repeating steps b-e to form a predominate configuration.

270. (Currently Amended) A computer program product for recognizing a pattern in information for use in a computer including a central processing unit and a memory, the memory maintaining a set of initial ordered Fourier series, the computer program product comprising:

a computer readable medium;

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program code means embodied in the computer readable medium, the program code means comprising:

means for receiving data representative of physical characteristics or representations of physical characteristics within an input context of the physical characteristics from a transducer and transforming the data, using the central processing unit, into a Fourier series in Fourier space wherein the input context is encoded in time as delays corresponding to modulation of the Fourier series at corresponding frequencies;

means for receiving a plurality of the Fourier series in Fourier space including at least one ordered Fourier series from the memory, forming a string comprising a sum of the Fourier series using the central processing unit and storing the string in memory;

means for retrieving the string from memory, ordering the Fourier series contained in the string to form an ordered string using the central processing unit and storing the ordered string in memory; and

means for retrieving multiple ordered strings from the memory, forming complex ordered strings from the ordered strings using the central processing unit and storing the complex ordered strings to the memory; and

~~a display device for displaying a pattern recognized using the complex ordered strings to a user.~~

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271. (Currently Amended) A method of recognizing a pattern in information comprising data and establishing an order formatted pattern in information, the method comprising:

receiving input data from a transducer ~~at a computer comprising a memory~~, the input data related to one or more physical characteristics or one or more representations of physical characteristics within a physical context of an item of interest;

encoding inputted data, ~~using the computer~~, as a plurality of Fourier components in Fourier Space and form a plurality of Fourier series from said Fourier components, said Fourier series representing information comprising data and input context;

associating said plurality of Fourier series with each other according to spectral similarities between said plurality of Fourier series to form a string ~~using the computer~~, said string being a sum of associated plurality of Fourier series;

ordering said plurality of Fourier series within said string based on relative degree of association of order formatted subsets of said string with relevant aspects of a standard ordered string ~~using the computer~~;

assigning an activation probability parameter to each of said plurality of Fourier components and to each of said plurality of Fourier series to produce a predominant configuration string ~~using the computer~~, generating a probability operand based on said activation probability parameter, said probability operand determining whether an activation of any one of said plurality of Fourier component and said plurality of Fourier series is to cause an activation of an associated another of said plurality of Fourier components and said plurality of Fourier series from said ordered string; and

storing said predominant configuration string in ~~said~~ memory, wherein the predominant configuration string allows a pattern in newly inputted information to be recognized.

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281. (Currently Amended) A system for recognizing a pattern in information comprising data ~~using a computer comprising a memory~~, the system comprising:

an input layer operable to receive said data at the computer, wherein said data comprises information representative of one or more physical characteristics or one or more representations of physical characteristics within a physical context of an item of interest, and to encode said received data as parameters of a plurality of Fourier series in Fourier space, said plurality of Fourier series including input context of said data;

a memory comprising a set of initial ordered Fourier series;

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an association layer operable to add associated Fourier series together to form a string using the computer;

an ordering layer operable to order said string based on relative degree of association of order formatted subsets of said string with relevant aspects of characteristics with respect to at least one of said initial ordered Fourier series to form an ordered string using the computer; and

a predominant configuration layer for receiving said ordered string using the computer and for assigning an activation probability parameter to each of said plurality of Fourier series using the computer to produce a predominant configuration string, generating a probability operand based on said activation probability parameter using the computer, said probability operand determining whether an activation of any one of said plurality of Fourier components and said plurality of Fourier series is to cause an activation of an associated another one of said plurality of Fourier components or Fourier series,

wherein the memory store said predominant configuration string, said predominant configuration string allowing a determination of a relative association of a newly inputted information to said inputted information already processed, thereby recognition of a pattern in said information can be recognized.

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290. (Currently Amended) A computer readable medium having stored thereon a computer program to implement a method of recognizing a pattern in information comprising data using a computer, said computer program comprising a plurality of codes for executing the steps of:

encoding, using the computer, said data as parameters of a plurality of Fourier components in Fourier space, wherein said information comprising said data represents one or

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more physical characteristics or one or more representations of physical characteristics within a physical context of an item of interest;

| adding, using the computer, said plurality of Fourier components together to form a plurality of Fourier series in Fourier space, said plurality of Fourier series representing inputted information;

| sampling, using the computer, at least one of said plurality of Fourier series in Fourier space with a filter to form a sampled Fourier series;

| modulating, using the computer, said sampled Fourier series in Fourier space with said filter to form a modulated Fourier series;

| determining, using the computer, a spectral similarity between said modulated Fourier series and another one of said plurality of Fourier series;

| determining, using the computer, a probability expectation value based on said spectral similarity;

| generating, using the computer, a probability operand based on said probability expectation value;

| adding, using the computer, said modulated Fourier series and said another Fourier series, if said probability operand has a desired value, to form a string of Fourier series in Fourier space, said string representing an association between Fourier series to thereby allow recognition of a pattern in the information; and

| storing said string in a memory of the computer.

294. (Currently Amended) A method for recognizing a pattern in information and establishing an order formatted pattern in information with respect to standard ordered information, the method performed in a computer and comprising:

| a.) obtaining, using the computer, a string comprising a sum of Fourier series from a computer memory, said string representing information that represents a one or more physical characteristics or one or more representations of physical characteristics within physical context of an item of interest;

| b.) selecting, using the computer, at least two filters from a selected set of filters;

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- c.) ~~sampling, using the computer,~~ the string with the filters such that each of the filters produces a sampled Fourier series, each Fourier series comprising a subset of the string;
- d.) ~~modulating, using the computer,~~ each of the sampled Fourier series in Fourier space with the corresponding selected filter such that each filter produces an order formatted Fourier series;
- e.) ~~adding, using the computer,~~ the order formatted Fourier series produced by each filter to form a summed Fourier series in Fourier space;
- f.) ~~obtaining, using the computer,~~ an ordered Fourier series from the memory;
- g.) ~~determining, using the computer,~~ a spectral similarity between the summed Fourier series and the ordered Fourier series;
- h.) ~~determining, using the computer,~~ a probability expectation value based on the spectral similarity;
- i.) ~~generating, using the computer~~ a probability operand based on the probability expectation value;
- j.) repeating steps b-i until the probability operand has a desired value, when said probability operand has a desired value a pattern in information has been recognized and an order formatted pattern in the information has been established;
- k.) storing the summed Fourier series to an intermediate memory;
- l.) removing the selected filters from the selected set of filters to form an updated set of filters;
- m.) removing the subsets from the string to obtain an updated string;
- n.) selecting an updated filter from the updated set of filters;
- o.) sampling the updated string with the updated filter to form a sampled Fourier series comprising a subset of the string;
- p.) modulating the sampled Fourier series in Fourier space with the corresponding selected updated filter to form an updated order formatted Fourier series;
- q.) recalling the summed Fourier series from the intermediate memory;
- r.) adding the updated order formatted Fourier series to the summed Fourier series from the intermediate memory to form an updated summed Fourier series in Fourier space;
- s.) obtaining an updated ordered Fourier series from the high level memory;

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t.) determining a spectral similarity between the updated summed Fourier series and the updated ordered Fourier series;

u.) determining a probability expectation value based on the spectral similarity;

v.) generating a probability operand based on the probability expectation value;

w.) repeating steps n-v until the probability operand has a desired value or all of the updated filters have been selected from the updated set of filters, when the probability operand has a desired value a pattern in information has been recognized and an order information pattern in the information has been established;

x.) if all of the updated filters have been selected before the probability operand has a desired value, then clearing the intermediate memory and returning to step b;

y.) if the probability operand has a desired value, then storing the updated summed Fourier series to the intermediate memory;

z.) repeating steps l-y until one of the following set of conditions is satisfied: the updated set of filters is empty, or the remaining subsets of the string of step m.) is nil; and

aa.) storing the Fourier series in the intermediate memory in the high level memory, said updated summed Fourier series representing said plurality of Fourier series in said strings ordered according to a plurality of associations between the information of the plurality of order formatted subset Fourier series and the at least one ordered Fourier series from high level memory.

304. (Currently Amended) A computer program product for use in a system for recognizing a pattern in information comprising data, said computer program product comprising:

a computer readable medium having stored thereon program code means, said program code means comprising:

means for receiving data from a transducer ~~at a computer~~, and to encode said received data as parameters of a plurality of Fourier series in Fourier space, said plurality of Fourier series including input context of said data, wherein said information comprising said data represents one or more physical characteristics or one or more representations of physical characteristics within a physical context of an item of interest;

means for associating Fourier series together to form a string using the computer;
means for ordering said string based on a relative degree of association of order
formatted subsets of said string with relevant aspects of information of a standard string
to form an ordered string using the computer;
means for forming a complex ordered string from a plurality of ordered strings,
said complex ordered string representing a historical association and order of processed
and stored information to thereby allow recognition of a pattern in information using the
computer; and
means for storing said complex ordered string in a memory.

307. (Currently Amended) A data structure in a memory for access by a computer
program for processing information, said data structure allowing an efficient recognition of a
pattern in newly presented information comprising data and input context representing
characteristic in relational association with information stored in said memory, said data structure
comprising:

a plurality of transduced data objects, each of said plurality of transduced data objects
providing an input data object representative of characteristics received at a computer from a
transducer acting on a signal provided by the characteristics encoded as a Fourier series in
Fourier space;

a plurality of memory data objects stored in memory registers of the computer
corresponding to the input data objects;

a plurality of association data objects, each of said plurality of association data objects
being a sum calculated by the computer of associated ones of said plurality of memory data
objects or transduced data objects;

a plurality of order formatted data objects, each of said plurality of order formatted data
objects being one of said plurality of association data objects arranged by the computer in a
hierarchically order of relative degree of association of relevant aspects of said information with
respect to a standard plurality of association data objects;

a plurality of activation probability objects, each of said plurality of activation
probability objects being assigned to a respective one of said plurality of transduced data objects,

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input data objects, memory data objects, said plurality of association data objects and said plurality of order formatted data objects by the computer;

a plurality of probability operands being assigned by the computer, to a respective plurality of transduced data objects, input data objects, memory data objects, said plurality of association data objects and said plurality of order formatted data objects, each based on said activation probability objects;

wherein each of said plurality of transduced data objects, said input data objects, said memory data objects, said plurality of association data objects and said plurality of order formatted data objects is activated by the computer when one of said plurality of probability operands has a desired value; and

wherein a value of each of said plurality of activation probability objects is determined by the computer based on historical values and frequency of activation of said respective one of said plurality of transduced data objects, input data objects, memory data objects, said plurality of association data objects and said plurality of order formatted data objects to thereby allow recognition of characteristics of said newly presented information based on historical relational and associational pattern in said information stored in said memory,

wherein said data structure is created using computer and at least one of said plurality of activation probability objects is stored in said memory.

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